Remarks

Claims 51-56, 58-75, 77-94 and 97-100 are pending herein. By this Amendment, claims 46-50, 57, 95 and 96 have been cancelled; claims 51-55 and 58 have been amended; and new claims 97-100 have been added. New claims 97 and 99 replace cancelled claims 46 and 57, respectively. Thus, the independent claims are now 97 and 99.

New claim 97 is directed to a catalytic system for the polymerization of at least one olefin in a diluting medium in the presence of the catalytic system, the catalytic system being in formed *in situ* from: (A) at least one ligand represented by formula (Ia), (Ib), (Ic), (Id') or (I'), and (B) at least one nickel compound selected (B1), (B2) and (B3). New claim 98 depends upon claim 97 and limits the ligand(s) to that of formula (Ia'), which is a species of the ligand of formula (Ia).

Support for the recitation in new claim 97 that the catalytic system is formed *in situ* can be found in the specification at, for example, page 1, lines 3-5, and page 2, lines 3-4. Support for the ligands of formulas (Ia), (Ib) and (Ic) recited in claim 97 can be found, e.g., in cancelled claim 50. The ligand of formula (Id') is a species of the ligand of formula (Id) in cancelled claim 46. The ligand of formula (I') in claim 97 is a species of the ligand of formula (I) recited in cancelled claim 46.

New claim 99 is directed to a process for the polymerization of at least one olefin in a diluting medium in the presence of the catalytic system recited in claim 97. New claim 100 depends upon claim 99 and limits the ligand(s) used in the catalytic system to the ligand of formula (Ia').

Claims 51-55 have been amended to depend upon new claim 97 rather than cancelled claim 46.

Claim 58 has been amended to depend upon new claim 99 rather than cancelled claim 57.

In the Office Action, claims 46-75 and 77-96 are rejected under 35 U.S.C. §102(b) as being anticipated by Kurtev et al., *Binuclear nickel-ylide complexes as effective ethylene oligomerization/polymerization catalysts*, Journal of Molecular Catalysis A: Chemical 103 (1995) pages 95-103 ("Kurtev").

In view of the remarks herein, Applicants respectfully request reconsideration and withdrawal of the rejection set forth in the Office Action.

I. The Rejection

Claims 46-75 and 77-96 are rejected under 35 U.S.C. §102(b) as being anticipated by Kurtev. As noted above, claims 46-50, 57, 95 and 96 have been cancelled; claims 51-55 and 58 have been amended; and new claims 97-100 have been added. The independent claims are now 97 and 99.

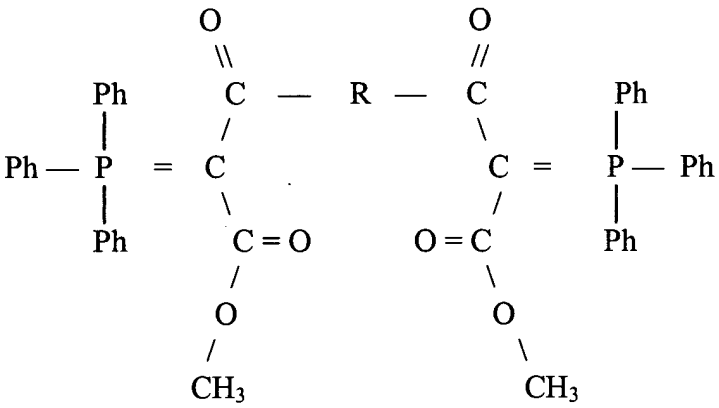
As stated above, new claim 97 is directed to a catalytic system for the polymerization of at least one olefin in a diluting medium in the presence of the catalytic system, the catalytic system being in formed *in situ* from: (A) at least one ligand represented by formula (Ia), (Ib), (Ic), (Id') or (I'), and (B) at least one nickel compound selected (B1), (B2) and (B3). New claim 99 is directed to a process for the polymerization of at least one olefin in a diluting medium in the presence of the catalytic system recited in claim 97. New claims 98 and 100 respectively depend upon claims 97 and 99 and limit the ligand(s) to that of formula (Ia'), which is a species of the ligand of formula (Ia).

Thus, because the catalytic system set forth in claims 97 and 99 is formed *in situ*, the catalytic system polymerizes ethylene in the absence of a phosphine scavenger.

For at least the reasons given below, Applicants respectfully submit that Kurtev does not anticipate new independent claims 97 and 99 or dependent claims 51-56, 58-75, 77-94, 98 and 100.

1. <u>Ligand of Formula (Ia)</u>

In claims 97 and 99, the ligand of formula (Ia) has the following structure:



(Ia)

where R represents a 5,6-bicyclo[2.2.1]hept-2-ene radical; $-(CH_2)_4-$ or $-(CH_2)_8-$.

Even if the ligand of formula (Ia) is considered to correspond to ligands which can be used to form catalyst complexes # 4 and #5 set forth on page 97 of Kurtev, Applicants submit that Kurtev still does not anticipate the catalytic system set forth in claim 97 or the method set forth in claim 99.

Kurtev teaches that "[a]ll the binuclear nickel-ylide complexes (1-9) polymerize ethylene in presence of phosphine scavengers to give polyethylene" (page 97). Although the reference teaches that "[c]omplexes 1, 2 and 9 polymerize ethylene even without phosphine scavengers thus producing low molecular weight polyethylene" (page 97), Kurtev does not teach that complexes 4 and 5 can polymerize ethylene in the absence of a phosphine scavenger. In fact, Kurtev teaches that even in the presence of a phosphine scavenger, complex 3 (as well as complexes 5 and 6) oligomerizes ethylene "but the product linearity is lower than those obtained by the related mononuclear complexes" (page 97).

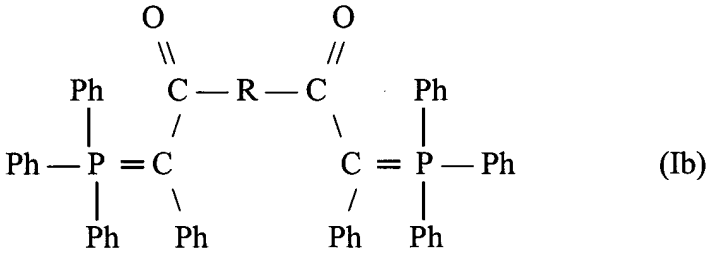
As pointed out above, the catalytic system set forth in instant claims 97 and 99 is formed *in situ* and polymerizes ethylene in the <u>absence</u> of a phosphine scavenger. If the ligand used to form Applicants' claimed catalytic system were used in the reaction scheme shown at the top of Kurtev's page 97, the resulting catalyst would not be the

same as Applicants' catalyst because the Kurtev reaction scheme uses a phosphine scavenger.

Thus, for at least the foregoing reasons, Applicants submit that Kurtev does not teach or suggest Applicants' claimed catalytic system using the ligand of formula (Ia) and, therefore, does not anticipate either such catalytic system or a method of using such catalytic system to polymerize olefins.

2. <u>Ligand of Formula (Ib)</u>

In claims 97 and 99, the ligand of formula (Ib) has the following structure:



(Ib)

wherein R represents a 5,6-bicyclo[2.2.2]-hept-2-ene radical or $-(CH_2)_8-$.

Even if the ligand of formula (Ib) is considered to correspond to a ligand which can be used to form catalyst complex # 6 set forth on page 97 of Kurtev, Applicants submit that Kurtev still does not anticipate the catalytic system set forth in claim 97 or the method set forth in claim 99.

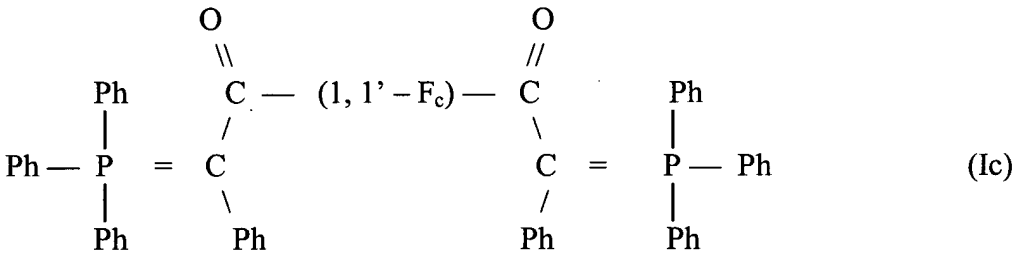
As pointed out above, Kurtev teaches that "[a]ll the binuclear nickel-ylide complexes (1-9) polymerize ethylene in presence of phosphine scavengers to give polyethylene" (page 97). Kurtev does not teach that complex 6 can polymerize ethylene in the absence of a phosphine scavenger. Kurtev teaches that even in the presence of a phosphine scavenger, complex 6 (as well as complexes 3 and 5) oligomerizes ethylene "but the product linearity is lower than those obtained by the related mononuclear complexes" (page 97).

As discussed above, the catalytic system set forth in instant claims 97 and 99 is formed *in situ* and polymerizes ethylene in the absence of a phosphine scavenger. If the ligand used to form Applicants' claimed catalytic system were used in the reaction scheme shown at the top of Kurtev's page 97, the resulting catalyst would not be the same as Applicants' catalyst because the Kurtev reaction scheme uses a phosphine scavenger.

Thus, for at least the foregoing reasons, Applicants submit that Kurtev does not teach or suggest Applicants' claimed catalytic system using the ligand of formula (Ib) and, therefore, does not anticipate either such catalytic system or a method of using such catalytic system to polymerize olefins.

3. <u>Ligand of Formula (Ic)</u>

In claims 97 and 99, the ligand of formula (Ic) has the following structure:



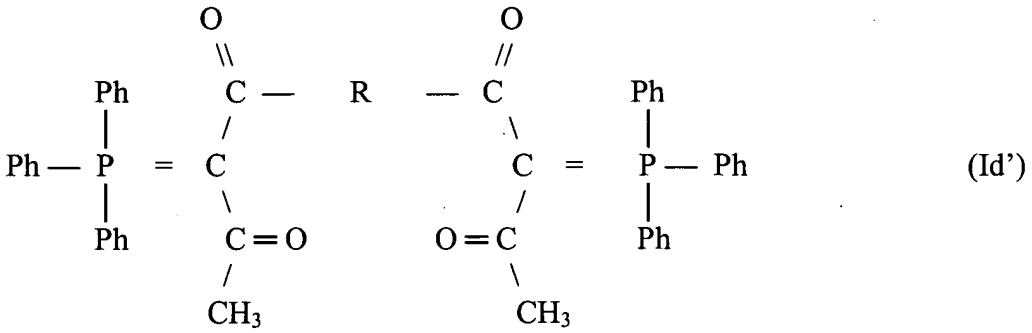
(Ic)

where 1,1'-F_c represents a-1,1'-ferrocenylene radical.

None of the catalyst complexes disclosed in Kurtev contains a 1,1'-ferrocenylene radical as the "R" group. Thus, Kurtev does not teach or suggest a catalytic system containing a ligand of formula (Ic) or a method of using catalytic system to polymerize an olefin.

4. Ligand of Formula (Id')

In claims 97 and 99, the ligand of formula (Id') has the following structure:



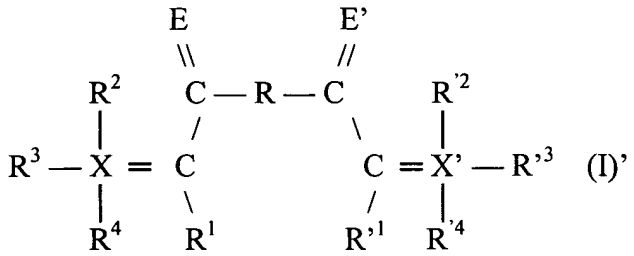
(Id')

where R represents a phenyl radical of the formula 1,4-C_6H_4.

None of the catalyst complexes disclosed in Kurtev contains a combination of a 1,4-C_6H_4 phenyl radical as the "R" group and a $-C(O)OCH_3$ radical as the "R^1" group. Thus, Kurtev does not teach or suggest a catalytic system containing a ligand of formula (Id') or a method of using catalytic system to polymerize an olefin.

5. Ligand of Formula (I)'

In claims 97 and 99, the ligand of formula (I)' has the following structure:



(I)'

where:

- E and E' each represent independently an oxygen or a sulfur atom;
- X and X' each represent independently a phosphorus, arsenic or antimony atom;
- the radicals R^1 and R'^1, which are identical or different, are selected from the group consisting of:

  * branched or cyclic alkyl radicals;

* arylalkyl radicals;

* alkylaryl radicals;

* halogens;

* hydroxyl radical; and

* alkoxide radicals;

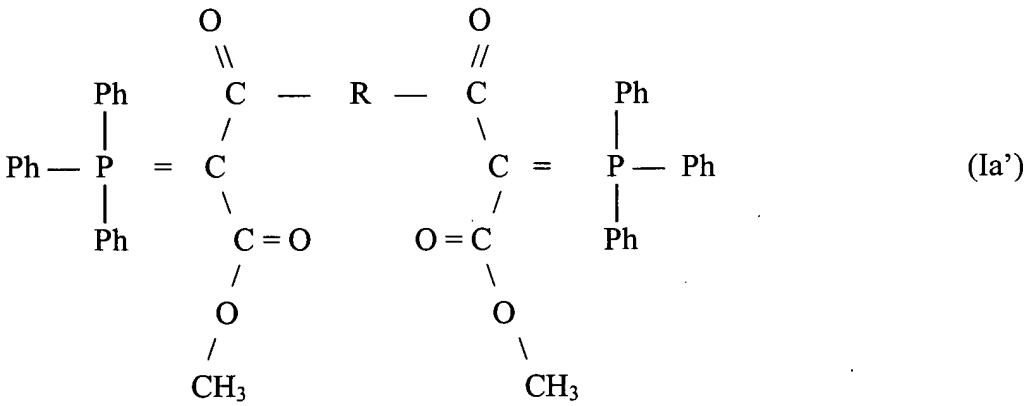
- the R^2, R'^2, R^3, R'^3, R^4 and R'^4 radicals, which are identical or different, are selected from the group consisting of linear, branched or cyclic alkyl radicals; and

- R is a divalent radical.

None of the catalyst complexes disclosed in Kurtev contains any of the R^1 groups which can be used in the ligand of formula (I)'. Thus, Kurtev does not teach or suggest a catalytic system containing a ligand of formula (I)' or a method of using such catalytic system to polymerize an olefin.

6. <u>Ligand of Formula (Ia')</u>

In claims 98 and 100, the ligand of formula (Ia') has the following structure:



(Ia')

where R represents a 5,6-bicyclo[2.2.1]hept-2-ene radical.

In the ligand of formula (Ia'), R is a 5,6-bicyclo[2.2.1]hept-2-ene radical and R_1 is a $C(O)OCH_3$ radical. Kurtev does not teach this combination of R and R_1 radicals.

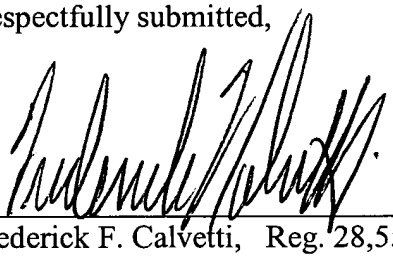
Therefore, Kurtev does not teach or suggest a catalytic system formed from a ligand of formula (Ia') or a method of using such catalytic system.

Therefore, for at least the foregoing reasons, Applicants submit that Kurtev does not anticipate instant claims 51-56, 58-75, 77-94 and 97-100.

II. Conclusion

In view of the foregoing remarks, Applicants respectfully request that the §102 rejection be withdrawn and that claims 51-56, 58-75, 77-94 and 97-100 be allowed.

Respectfully submitted,



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